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UNIVERSITY BULLETIN
NO. 23
DECEMBER, 1904

PRESIDENT'S REPORT

OF

The University of Montana

1903-1904

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UNIVERSITY, FRONT VIEW

UNIVERSITY OF MONTANA

ANNUAL REPORT

OF THE

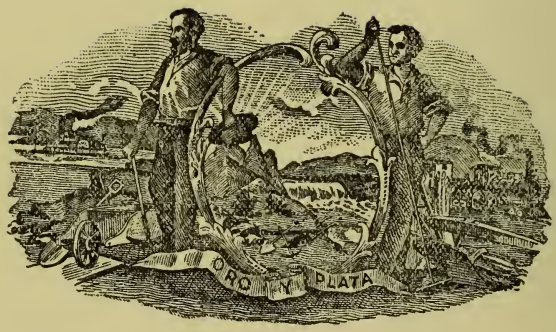
President of the University

TO THE

STATE BOARD OF EDUCATION

1903-1904

"INDEPENDENT PUBLISHING COMPANY, HELENA, MONTANA."


ORO Y PLATA

The Montana State Board of Education.

Ex-Officio.

GOVERNOR JOSEPH K. TOOLE, President.
JAMES DONOVAN, Attorney General.
W. W. WELCH, Supt. Pub. Instruction, Secretary.

Appointed.

N. B. HOLTER, Helena	Term Expires February 1, 1905
G. T. PAUL, Dillon	" " " 1, 1905
JOHN M. EVANS, Missoula	" " " 1, 1906
CHARLES R. LEONARD, Butte	" " " 1, 1906
N. W. McCONNELL, Helena	" " " 1, 1907
W. M. JOHNSTON, Billings	" " " 1, 1907
O. P. CHISHOLM, Bozeman	" " " 1, 1908
S. D. LARGENT, Great Falls	" " " 1, 1908
D. P. VAN HORNE	Clerk of the Board

Executive Committee of the State University.

J. H. T. RYMAN, President	Missoula
T. C. MARSHALL, Secretary	Missoula
HIRAM KNOWLES	Missoula

The Faculty.

OSCAR J. CRAIG, A. M., Ph. D.,
President.
University Place, University Avenue.

JAMES M. HAMILTON, M. S.
Vice-President and Professor of Psychology and History.
Resigned September 1, to accept the Presidency of the Agricultural College of Montana.

CYNTHIA ELIZABETH REILEY, B. S.,
Professor of Mathematics.
Woman's Hall, University Grounds.

W. M. ABER, A. B.,
Professor of Latin and Greek.
No. 26 Hammond Block.

FREDERICK C. SCHEUCH, B. M. E., A. C.,
Professor of Modern Languages and Secretary of the Faculty.
309 South 5th St., West.

MORTON J. ELROD, M. A., M. S.,
Professor of Biology.
205 South 5th St., East.

FRANCIS CORBIN, B. L.,
Professor of English Literature.
302 South 6th St., East.

WILLIAM D. HARKINS, A. B.,
Professor of Chemistry.
521 East Pine.

JESSE P. ROWE, M. A.,
Professor of Physics and Geology.
118 South 4th St., West.

ROBERT SIBLEY, B. S.,
Professor of Mechanical Engineering.
309 South 5th, West.

ELOISE KNOWLES, Ph. B.,
Instructor in Drawing.
South 2nd St., West.

MRS. BLANCHE WHITAKER,
Director of Music School.
322 South 5th St., East.

LOUISE HATHEWAY, B. A.,
Instructor in English and Rhetoric
521 East Pine St.
Resigned, September 1, 1904.

RUTH ELISE KELLOGG,
Instructor in Elocution and Physical Culture.
310 South 5th St., East.

H. B. CONIBEAR,
Director of the Gymnasium,
123 South 5th St., West.

NELLIE A. WHITNEY, B. L.,
Instructor in the Preparatory School, and Preceptress of Woman's Hall.
Woman's Hall, University Grounds.

JAMES S. SNODDY, A. M.,
Instructor in English and Rhetoric,
118 South 4th St., West.

ALLAN McPHAIL,
Violin.
Studio, corner of Pine and Pattee Sts.

ANNA F. CARTER,
Assistant in Preparatory School,
Woman's Hall, University Grounds.

WILLIAM O. DICKINSON,
Laboratory Assistant in Chemistry,
First National Bank Block.

CLAUDE SPAULDING,
Laboratory Assistant in Biology.
714 Locust St.

JOSEPH W. STREIT,
Laboratory Assistant in Physics.
South 5th St., West.

JOHN R. HAYWOOD,
Laboratory Assistant, Mechanical Engineering.
Stevens St., South Missoula.

GERTRUDE BUCKHOUSE, B. S.,
Librarian.
Woman's Hall, University Grounds.

Standing Committees.

COMMITTEE ON GRADUATE WORK—The President, Elrod, Reiley, Scheuch, Snoddy.

COMMITTEE ON GRADING AND CLASSIFICATION—The President, Aber, Elrod, Reiley and Scheuch.

COMMITTEE ON EXAMINATIONS—Aber, Knowles, Whitney.

COMMITTEE ON STUDENT AFFAIRS—The President, Rowe, Corbin, Scheuch, Harkins.

COMMITTEE ON ATHLETICS—Conibear, Sibley, Kellogg.

President's Report.

University of Montana, Missoula, Mont., Nov. 30, 1904.

To the Montana State Board of Education, Helena, Montana.

Gentlemen: In accordance with the provisions of the Statutes of Montana, as found in Section (5) of an "Act to Establish, Locate, Maintain and Govern the University of Montana," the following report for the year ending November 30, 1904, is respectfully submitted.

BUILDINGS AND GROUNDS.

During the year now closing the improvement of the University Grounds has consisted principally in the planting of additional trees, the extension of driveways and walks, and the making of new lawns. The lawns, trees and shrubbery heretofore arranged are all in excellent condition, owing to the abundant water supply and the careful attention that has been given, especially through the dry seasons of the year. There has been a successful attempt to place a variety of trees on the grounds, for it has been found that kinds not native in this locality, will flourish when the proper care is exercised. This variety contributes to the beauty of the Campus.

The University now possesses four commodious buildings, all well constructed and well equipped for the work that is already in progress.

The University Hall contains the Assembly Hall, the Faculty Room, President's Office, Library, Lecture Rooms in Mathematics, Literature, English, Ancient Languages, Modern Languages, Biological Lecture Room and Laboratories, and Biological Museums.

The Science Hall contains lecture rooms and laboratories for Physics, Chemistry, Assaying and Mechanical Engineering, also the museums in Geology and Mineralogy.

The Gymnasium is well supplied with store rooms, dressing rooms, and an abundant floor space for the use of classes in physical culture and military drill. Lockers have been supplied for the care of personal property and other effects.

The Woman's Hall affords excellent boarding accommoda-

tions for those young women who wish to live on the University Grounds. It has been placed under the management of Mrs. J. Wilson Moore, who is under contract to furnish good and acceptable day board at the uniform price of four dollars and twenty-five cents per week. The rent charged for the rooms is six dollars per month when occupied by a single person, or five dollars each if two occupy the same room. The amounts received from rent are collected by the Secretary of the Faculty and placed in a fund devoted to the repair and maintenance of the building. Many young men rooming in the city find it convenient to take their meals at Woman's Hall. A large number of our non-resident women students occupy this building and are in charge of the Preceptress, Miss Nellie A. Whitney, one of the members of the Universty Faculty.

As was expected this building also provides a place for those social functions that can be made helpful in brightening student life and enabling the student to perform his part in society with ease and pleasure and without embarrassment and awkwardness.

THE FACULTY.

The Faculty remains as last year with two exceptions.

Miss Anna Louise Hatheway, who has had charge of the department of English and Rhetoric, tendered her resignation, to take effect September 1, 1904.

The President and members of the University Committee to whom the choice of a successor was referred, selected Professor James S. Snoddy to fill the vacancy. Professor Snoddy is a graduate of the University of Missouri (B. L.) and has had three years of graduate study in English—one at the University of Nebraska, one at the University of Chicago, and one at Stanford University. While studying at the University of Nebraska he held a teaching-fellowship in English and took his master's degree (A. M.) He has had eight years of experience in the teaching of English—three years at Woodson Institute, Richmond, Missouri; four years at the State Normal School, Valley City, North Dakota; and one year at the Union High School, Livermore, California.

The week of the opening of the University in September, Vice President James M. Hamilton, Professor of Psychology and History, tendered his resignation in order to accept the

Presidency of the Montana State College of Agriculture and the Mechanic Arts. This vacancy has not been filled. For the time being the work of the department has been cared for by the President of the University. Recommendations concerning the election of a successor in the Department of History and Psychology are transmitted with this report.

It will be necessary to add to the teaching force in the departments of Biology, Physics, Chemistry, and Mechanical Engineering. There is also great need for more assistance in History and in Political and Economic subjects. Specific recommendations concerning these needs are also herewith transmitted.

THE LIBRARY.

The General Library and Reading Room occupies a large, well-lighted room on the first floor of University Hall. Special collections are shelved in separate rooms.

The system of department libraries prevails to a limited extent. Small collections of books specially needed in connection with laboratory and class room work being deposited in several departments.

The Library is open six days in the week. From Monday until Friday the hours are from 8:30 a. m. to 4:30 p. m.; Saturday from 9 a. m. to 12:30 p. m.

The Library must always be the center of all college and university work. Without an adequate book supply the work of every department must be narrowed and curtailed. The accumulated knowledge of the ages is recorded in books. There is no line of student work or investigation but demands the use of books. With the limited means at command, the attempt has been not to supply what was needed, but to supply that which is indispensable and absolutely demanded by the work already in progress in the different departments of the University.

The literary and scientific periodicals are carefully selected with reference to the department work.

Within the past two years the books, except a number of Government Reports, have all been catalogued and indexed. The cards give accession number, author, title and other necessary details concerning the books.

The books are being shelved and classed according to the Dewey decimal system. This work will include all pamphlets and periodicals, thereby making all of the material of the library

accessible and easily drawn upon. This is necessary because a University Library must be something more than an aggregation of books and material. Its contents must be so catalogued, indexed and arranged as to be easily accessible to the student and Professor.

Much valuable material frequently lies buried and useless for lack of proper arrangement.

Students are allowed free access to the shelves. The following are the rules governing the Library and Reading Room:

RULES GOVERNING THE LIBRARY AND READING ROOM.

1. The Library shall be open for reading and study at such hours as the Faculty may prescribe, and in these hours conversation, or other conduct which may divert attention or otherwise annoy, shall not be allowed.

2. Any one wishing any book or periodical (dictionary excepted) must apply to the Librarian for it, and before leaving the room the same must be returned to the Librarian, if not regularly drawn.

3. Books not marked "Reference Book" may be drawn from the Library and retained one week, and then may be redrawn for another week, but no book can be kept by one person longer than two weeks.

4. If a book is not returned within the week for which it is drawn the holder shall be subject to a fine of 10 cents; if not returned within two weeks from the time it was drawn, a fine of 25 cents; if not returned within a month a fine equal to the price of the book.

5. Reference books, current periodicals and papers cannot be taken from the library room except by special permission of the Librarian, and then only from the closing of the Library to the first succeeding hour of opening.

6. A violation of any of the foregoing regulations, or other rules, which may from time to time be prescribed, may forfeit a student's right to the use of the Library for such time as may be designated.

7. The maximum number of books which any student may have in possession from the Library at any one time in any one line of work shall be two; except that the Librarian may in spe-

cial cases allow additional volumes to be drawn on the recommendation of the professor in charge.

8. It is the duty of the Librarian to enforce the above regulations.

The Museum.

The Rooms—The Museum proper is on the first floor of the main building. One room in the basement is allotted for storage of the collections, and is packed full. The Museum is filled with cases, along the walls and in the interior. The cases are made after the best patterns, of native lumber, and display the collections to advantage. The walls are covered with insect cases containing mounted insects. Above the cases toward the ceiling are arranged the agricultural exhibits received from the Omaha Exposition, the large mounted fishes, collected and donated by Mr. R. A. Eddy, and the mounted birds of large size.

The Geological and Biological storeroom, in connection with the Museum, is located in the basement of University Hall and has for the storing of specimens shelves built on the four walls. These shelves are almost entirely filled with a number of new and beautiful Cretaceous and Tertiary leaves. Part of this valuable storeroom collection has been named and catalogued, but owing to lack of space in the Museum proper, but very little has been put out. However, as soon as more room is offered, the Museum will have a showing second to none in the Northwest.

The Museum material not stored in the room set apart for the collections is housed in the different departments. Indeed much of it is indispensible to departmental work. As a result much of the Museum is scattered. Considering the time during which material has been gathered and the amount expended, the collections have made remarkable growth.

The intention is to make the Museum a depository of the material representing the natural, mineral and scientific wealth of the state.

THE COLLECTIONS.

The collections of the Museum, from various sources, are as follows: A collection of over a thousand bird skins, almost entirely from the state; a collection of shells, partly collected in the

state, and partly through donations from several sources; a collection of plants, embracing about 3,000 species, with many thousand duplicates, received largely through donations; a collection of ores and minerals, received through donations, by collecting and from the exhibit at Omaha; a collection of insects, partly through purchase, but largely by collecting; a collection of fossils, almost entirely from the state, partly donated and for the remainder collected; a collection embracing money, historical relics, souvenirs and promiscuous articles; a collection of fishes, partly from the U. S. Fish Commission, the remainder collected in the state; a collection of fresh water entomostraca from the lakes and rivers of Montana; a collecttion embracing coals, rocks, concentrate samples, building stones, brick, tile and pottery, developed and produced in the state; a set of the series of educational rocks prepared by the U. S. Geological Survey. The Wiley collection of over a thousand species of lepidotera.

During the past year much work has been done on the Museum collections. Many hundreds of insects have been arranged permanently in Comstock insect cases, more than a hundred of these cases being now required to house the collection, with a large number as yet in papers.

Drawer space has been arranged for the collection of bird skins, now numbering more than a thousand, and the collection is now systematized so as to be easily accessible for any species.

Many hundreds of botanical specimens have been mounted, and all the identified Montana specimens have been systematically arranged in the case made especially for the collection and are easily accessible. This work is being continued as fast as possible.

A shipment of glassware has been received from a German firm for displaying the alcoholic material that has accumulated and is not placed on exhibition. The containers are square boxes, with lids ground to fit. The boxes display the material to the best advantage, without the distortion so noticeable in round containers. The material already placed in these boxes makes a handsome exhibit.

A supply of paper-lined pasteboard trays is kept on hand, and the various collections as they come in are placed in these trays, are properly labelled and are shown to the best advantage.

It is most earnestly requested that all who are interested in

the University, and especially in the preservation of valuable material for scientific work, should take special pains to contribute to the material in the Museum. Time and circumstances are fatal to nearly all specimens, but being properly cared for and placed in the Museum of the University, they will be preserved.

Correspondence is solicited concerning material which may be donated. All donations will be properly acknowledged, and the articles properly labelled and the donors names recorded.

The additions to the Museum the past year are as follows:

T. L. Lewis, specimens of volcanic rocks from Idaho. Also beautiful specimens of iron pyrite crystals, limonite Xls, quartzite, native arsenic, etc. Donated.

Martin Jones, several specimens of Chalcocite and Bornite from Butte. Donated.

Rev. Mr. Sawyer, vertebra of mammoth from California. Donated.

Mrs. Smurr, Deer Lodge, Montana, many perfect fossil Carboniferous leaves from Indiana, and several crinoid heads and trilobites. Donated.

D. D. Nicholson, Darby, Montana, Lignite samples.

E. C. Garrett, Choteau, Montana, specimens of lignite and building stone. Donated.

H. W. Gardiner, Augusta, Montana, specimens of coal.

Homer Syfuyer, Wibaux, Montana, Xls. of Barite and Anhydrite. Donated.

Miss Ella Orr, Butte, Montana, a large and beautiful collection of shells, fossils, agates, ores, rocks, minerals, etc. Loaned.

Summer Geological Survey, many first-class Fox Hill, Fort Pierre and Laramie invertebrate fossils. Three or four hundred Laramie fossil leaves. Part of a Mososaur skeleton, including some of the dentition. Parts of several Dinosaur skeletons. Several coal and lignite specimens from eastern Montana. In this collection much new and undescribed material is found.

The Wiley Collection of Insects.—The University has come into possession of the insect collection of the late C. A. Wiley, of Miles City. It embraces over a thousand species, many thousand specimens of Lepidoptera. Most of these are from the eastern end of the state, but many obtained by exchange. It is thus rich in native species from the state, and at the same time has many of the showy forms from Europe and the Orient. This is a great addition to the entomological collection of the University, and together with those gathered from other sources, gives the University an excellent exhibition of Lepidoptera, as well as a fine series for student study.

The University Preparatory School.

The attendance and work in this department of the University has been quite satisfactory. The enrollment is not quite so large as last year, owing to the increased efficiency of the High Schools of the state. It is firmly believed that the attendance will continue to decrease as the number of High Schools increase, and that in a few years this adjunct to the University may be dispensed with altogether.

In the organization of the University the Statute provides that the Preparatory Department shall be maintained as long as the Board of Education may deem necessary, and then be dispensed with at such time as may seem best.

The increase in the collegiate department is the largest in the history of the University—the per cent of increase over all of last year up to date being thirty-two per cent.

If this rate of increase remains constant, and there is no reason to believe that it will be diminished, the necessity for retaining a full Preparatory Department will no longer exist.

However, there are still some localities in the state where the High School is not accessible to those wishing to prepare for a college education. In a number of these districts the leading town schools will soon be accredited. Some have already made application, but have slight deficiencies in certain lines of work and can not yet be recommended for the accredited list.

Accredited High Schools.

The State Board of Education, in a meeting held June 1, 1896, took the following action:

"Candidates seeking admission to any of the regular courses in any State Educational Institution, must be at least sixteen years of age and must possess a good moral character and good bodily health.

. . . . . .

"Accredited Schools.—Any High School or Academy whose course of instruction covers the branches requisite for admission to one or more of the courses of any State Educational Institution may be admitted to its accredited list of preparatory

schools, after a satisfactory examination by a committee appointed by the State Board of Education. Application for such examination may be made by any school board to the Secretary of the State Board of Education, whereupon a committee appointed by the State Board of Education will examine the course of study and methods of instruction of the school, and on the committees' favorable recommendation, and the concurrence of the State Board of Education, it will be entered upon the accredited list of the State Educational Institution for which it applied. Any graduate of such an approved school will be received by the President of the State Educational Institution wherein said graduate is entitled to enter, on presentation of proper diploma and certificate from the Superintendent of said school, into any of the courses of said institutiton for which said graduate has been fitted.

"Students of any accredited school who are not graduates must expect examinations as other candidates.

"A school once entered upon the accredited list will remain there until its administration is changed, or until notice is given by the State Board of Education of unsatisfactory results. Upon a change of administration application for continuation upon the list, if desired, must be made. If the work of the principal coming into charge has been recently examined in connection with some other school, a new examination may not be required, but such examination should in all cases be invited.

"Annual reports will be asked for by the State Board of Education from all accredited schools."

This legislation is still in force.

At the December meeting of the Board it appointed a committee "to formulate a uniform plan for accredited high schools." The committee met in Helena, December 28th, 1897, and formulated a plan, and a brief outline of work for accredited High Schools, which was adopted at the next meeting of the State Board of Education.

"This committee decided to recommend to the Board that the work of the eight grades, when arranged, shall be the standard for entrance to the high schools."

This recommendation, which was adopted by the Board, became of effect in 1899, when the State Common School Course of Study was published and placed in the hands of school boards, teachers and superintendents, and it still remains in force.

In June, 1899, the State Board of Education instructed the Diploma Committee to revise the Course of Study for accredited High Schools. At the December meeting the committee asked for further time, which was granted. At the regular meeting of the Board in June, 1900, the Diploma Committee reported the following outline of work which was unanimously adopted:

PROGRAM OF STUDIES FOR ACCREDITED HIGH SCHOOLS.

Classical Curriculum. Prepares for entrance to Classical Course, State University.	**Science Curriculum.** Prepares for all General Science Courses.	**English Curriculum.** Prepares for all Technical Courses and for the Normal School Professonal Course.
FIRST YEAR.		
Latin. English. Algebra. General History.	English. Algebra. General History. Physiology.	English. Algebra. Physiology. General History. Word Analysis.
Latin. English. Algebra. General History.	English. Algebra. Physical Geography. General History.	English. Algebra. Physical Geography. General History. Orthoepy and Phonics.
SECOND YEAR.		
Latin. English. Algebra. General History.	German or Latin. English. Algebra. Botany or Zoology.	English. Algebra. Botany or Zoology. General History.
Latin. English. Plane Geometry. General History.	German or Latin. English. Plane Geometry. Botany or Zoology.	English. Plane Geometry. Botany or Zoology. General History.

THIRD YEAR.

Latin. English. Plane Geometry. Physics.	German or Latin. English. Plane Geometry. Physics.	English. Plane Geometry. Physics. U. S. History.
Latin. English. Solid Geometry. Physics.	German or Latin. English. Solid Geometry. Physics.	English. Solid Geometry. Physics. Arithmetic. Civics.

LIST OF ACCREDITED HIGH SCHOOLS.

City High Schools.

City.	Superintendent.
Anaconda	F. A. Swanger
Billings	C. S. Brother
Butte	R. G. Young
Forsyth	H. Blair
Glendive	F. D. Smith
Great Falls	S. D. Largent
Hamilton	J. V. Owen
Helena	S. D. Condon
Marysville	J. W. Lenning
Miles City	H. P. Leavenworth
Missoula	J. G. McKay

County High Schools.

County.		Principal.
Beaverhead	Dillon	J. A. Koontz
Broadwater	Townsend	H. C. Riggs
Carbon	Red Lodge	J. M. Kay
Fergus	Lewistown	P. M. Silloway
Flathead	Kalispell	J. A. Ketcham
Gallatin	Bozeman	George B. Swan
Jefferson	Boulder	Frances Miller
Park	Livingston	Lewis Terwilliger
Powell	Deer Lodge	W. E. Eaton
Sweet Grass	Big Timber	W. C. Ryan.
Teton	Chouteau	A. B. Guthrie

Private Schools.

Stevensville Training School ..... M. L. Roark

Report of Accredited High Schools for tne Year Ending December 1, 1904,

LOCATION	Principal	Number of Teachers	Pupils in First Year	Pupils in Second Year	Pupils in Third Year	Pupils in Fourth Year	Value of Chemical Equipment	Value of Physical Equipment	Value of Biological Equipments	Number of Volumes in Library	Number of Graduates June, 1904	No. Graduates Jan. 1904	Name of pupil holding highest rank in class of June 1904.
Anaconda	Wm. K. Dwyer	6	23	32	15	16	$500	$600	....	1,000	18	..	.....
Billings	S. E. Dove	7	49	38	18	18	150	100	$125	2,000	8	..	.....
Butte	Henry M. Hart	24	49	77	159	275	3,600	1,600	850	3,284	24	16	Elizabeth S. Burritt
Forsyth	Miss Alma Wagner	3	10	6	4	2	300	200	60	700	2	..	.....
Glendive	Louise Roesch	2	14	11	6	....	....	150-200	50	750	6	..	Gertrude Montford
Great Falls	Helen Edgerton	9	76	53	30	27	....	1,500	....	300	15	..	Olive Garrick
Hamilton	J. V. Owens	3	22	18	14	10	125	125	25	800	7	..	Wm. Harris
Helena	Wm. R. Trowbridge	15	126	98	62	40	....	1,500	....	280	38	..	Ruth Wade
Marysville	J. W. Lenning	2	15	4	5	....	....	500	75	500	5	..	Minnie Bueschlein
Missoula	R. H. Daniels	5	66	50	19	....	....	400	....	200	8	..	Agnes Berry
Beaverhead Co., (Dillon)	J. A. Koontz	5	33	17	14	11	250	400	400	1,100	5	6	Chas. Hansen
Broadwater Co., (Townsend)	Wm. I. Fraser	3	23	14	10	5	....	300	100	300	4	..	.....
Carbon Co., (Red Lodge)	J. M. Kay	2	16	9	4	....	....	250	....	600	8	..	Raymond Robbins
Custer Co., (Miles City)	Edna B. Harris	4	25	16	11	7	250	175	25	225	8	..	.....
Fergus Co., (Lewistown)	P. M. Silloway	6	21	28	24	4	250	600	250	500	3	..	H. W. Silloway
Flathead Co., (Kalispell)	G. A. Ketcham	6	42	38	20	17	750	700	250	500	6	..	Joseph F. Goshom
Gallatin Co., (Bozeman)	Geo. B. Swan	7	71	50	35	....	....	700	350	175	17	21	Phoebe Morgan
Jefferson Co., (Boulder)	Frances Miller	2	12	5	4	....	....	300	50	250	5	..	Ulah M. Woodman
Powell Co., Deer Lodge	E. T. Eaton	4	25	15	9	10	700	150	....	100	5	..	Mona Beaumont
Sweet Grass Co., (Big Timber)	W. C. Ryan	2	17	4	9	....	....	300	150	200	11	..	.....
Teton Co., (Chouteau)	A. B. Guthrie	2	16	8	9	....	..	250	....	200	7	..	Edwin C. Wilcox
Stevensille	M. L. Roark	3	21	5	6	3	....	200	40	300	9	..	Maud Baldwin
Total	.....	122	772	586	487	436	....	.....	....	....	219	43	

FIELD WORK IN SCIENCE.

The Biological Station, located on Flathead lake near the mouth of Swan river, reports another prosperous season. The attendance has been about the usual number, but the work of high character.

The investigations and research work done at the station can not fail in being productive of much good in developing the resources of the state. The bulletins emanating from this source are eagerly sought for by the science men throughout the country. The report of the director, Morton J. Elrod, is herewith transmitted.

Professor Rowe, of the department of Physics and Geology, made a six weeks' collecting trip in Northern and Eastern Montana. In this there was collected a large number of minerals, ores and fossils for use in the University Museum. A detailed statement from Professor Rowe accompanies this report.

ATHLETICS AND GYMNASIUM WORK.

A committee from the Faculty, entitled The Committee on Athletics and Gymnasium Work, has general oversight of the athletic sports and gymnasium. The details of the management are in the hands of the Board of Directors of the Athletic Association. Regular gymnasium classes have been organized during the past year, one of young men and one of young ladies. The class of young men have exercises with the dumb bells, Indian clubs, punching bag, etc., together with "setting up" exercises and military drill. The class of young ladies are drilled with the dumb bells, Indian clubs, free arm exercises, wands and general calisthenics. This has been made possible by one of Missoula's citizens, Mr. C. H. McLeod, who has very kindly equipped the gymnasium with parallel and horizontal bars, trapeze and swinging rings, chest weight machines, and Whitely exerciser, vaulting horse, punching bag, boxing gloves, fencing foils, Indian clubs, dumb bells, wrist and finger machines, and a rowing machine. Besides these there are two small mats for the bars, and a large gymnasium rug, sixteen feet square, for wrestling and boxing. The athletic field, located in the northwest corner of the Campus, is now in excellent condition. A quarter of a mile running track is nicely finished, and the entire field has been well scraped and leveled. Within the

track there is located the baseball diamond and the football field. To the south are the tennis courts.

The general sports indulged in are football, basket-ball and baseball, together with the indoor and outdoor field sports.

The Faculty have established the following important regulations:

First. The football season will extend from September 1st to Thanksgiving day.

Second. Only bona fide students in the University, taking at least 12 hours per week of recitations or lectures, can represent the University in any of its games with other college teams. Teams representing the University will not be permitted to play teams representing other schools or colleges unless the latter conform to the same requirements for study.

Third. At least four days before the departure of University teams to play with school and college teams elsewhere, and also four days before games with such teams on the home grounds a list of the students from which names are to be selected for University teams, must be presented by managers to the Faculty for consideration and approval.

The University is a member of the Northwest Intercollegiate Athletic Association. The other members of this association are: University of Washington, University of Oregon, University of Idaho, Montana Agricultural College, Washington Agricultural College, Oregon Agricultural College and Whitman College. The purpose of this association is to regulate athletic contests among the colleges constituting its membership.

The following rules as to eligibility of contestants have been adopted:

Division II—Rules of Eligibility—Article I—Bona Fide Students—

Sec. 1. No one shall participate in any collegiate contest unless he be a bona fide student carrying work of 12 credits or recitation hours in a regular or special course as defined in curriculum.

Sec. 2. No student shall be allowed to participate in any intercollegiate contest who has failed to pass on any regular college work which has been assigned to him, until such work has been made up.

Sec. 3. No person having been a member of a college athletic team during any year, and having been in attendance in his institution less than one-half of the preceding college year, shall be permitted to play in any intercollegiate contest thereafter until he shall have been in attendance one-half a college year.

Sec. 4. No student who has represented one institution in any inter-

collegiate contest shall be allowed to represent another institution during the following year.

Sec. 5. No student registering after the 15th of October shall be eligible to play in any intercollegiate football contest.

Sec. 6. No student registering after the 15th of February shall take part in any intercollegiate contest held during the remainder of that year.

RULES ON AMATEURS.

Article II—Amateurs—Sec. 1. No person shall be allowed to compete in athletic contests of this association who is not an amateur.

Sec. 2. An amateur is a person who has never competed for money, or under false name, or with a professional for a prize, or with a professional where gate money is charged, nor has at any time taught, pursued or assisted at athletic exercises for money or for any valuable consideration.

Sec. 3. Nothing in this definition shall be construed to prohibit the competition between amateurs for medals, cups or prizes other than money. It is hereby expressly declared that this definitions is to be retroactive.

Sec. 4. Nothing in this article shall be construed to prohibit the acceptance by any amateur of his necessary traveling expenses incurred as referee, judge, umpire, scorer or starter, in going to and from the place of any amateur contest.

EVIDENCE OF PROFESSIONALISM.

Sec. 5. The disposing of any medal, cup or prize for a consideration shall be considered evidence of professionalism.

Sec. 6. The governing board shall have the power to restore to amateur standing any person who has violated the letter of these rules, but who, in their judgment, is not a professional by the spirit of these rules.

Article III—Four Year Rule—Sec. 1. No student shall take part in athletic exercises between institutions represented in this association for more than four years. It is understood that this rule shall not go into effect until September 1, 1904.

THE INTER-SCHOLASTIC HIGH SCHOOL MEET.

Early in March, 1904, an invitation was sent to the accredited High Schools of the University to join in an Inter-Scholastic meet, to be held at the University on May 19, 20 and 21, 1904. The exercises proposed were a contest in athletic sports and a contest in declamation.

The following is an extract from the invitation sent the accredited High Schools of the state:

"Greeting to the superintendents, principals, teachers and pupils of the city and county High Schools in the State of Montana: The University of Montana, desirous of bringing the

High Schools of the state closer together and of elevating athletics in the schools, anxious to foster a spirit of student activity and enterprise through friendly contest, and wishing to offer an opportunity where the teachers and pupils from distant parts of the state may meet and exchange greetings, will hold an athletic and declamatory contest on the University Campus at Missoula on the above dates. The contestants must be bona-fide students from the High Schools of the state, in accordance with the regulations adopted by the High School men at Anaconda last Christmas. The students of the University will take no part in the contests, but will devote their time to making the meet a success, and in seeing that the visitors are properly entertained."

The meeting was a success in every respect. Nineteen accredited schools were represented in the athletic contests and seventeen in the contests in declamation.

This affair was conducted without expense to the state, the financial obligations being met by gate receipts and voluntary contributions.

The Athletic Association of the University proposes to make this an annual event, believing that it will tend to bring the schools closer together in friendly relations and promote the right kind of spirit in physical and intellectual contests.

STUDENT ORGANIZATIONS.

The Athletic Association has been doing vigorous work in encouraging and strengthening the work in physical culture. By virtue of payment of the athletic fee, each student is a member of this organization. Persons in the Faculty may become members on payment of an annual fee of two dollars.

The organization is governed by a Board of Directors chosen from the Faculty and from the student body, and has general control over athletic affairs.

There are two literary societies: the Hawthorne, composed of young men, and the Clarkia, composed of young women. Both societies are doing effective work in the way of giving training in parliamentary practice and in the different forms of public speaking.

The Young Men's Christian Association and the Young Women's Christian Association both have active and efficient

organizations and both are accomplishing much good in their respective fields of labor.

UNIVERSITY LANDS.

The University buildings are located on a tract of land comprising forty acres. Twenty acres of this land was donated by the Capt. C. P. Higgins' estate, and twenty by the South Missoula Land Company.

This tract of land is all under fence and mostly improved. With each year a part of this has been brought under cultivation and new walks and driveways added. As the new buildings have been constructed new lawns have been made, so that the Campus presents a symmetrical and beautiful appearance.

Joining this forty-acre tract above mentioned and lying to the eastward on the slope of Old Mount Sentinel, is the forty acres of land donated to the University by the Northern Pacific Railway Company. Still to the eastward, contiguous with this body of land and covering the crest of Old Sentinel, is government land which, at the last session of Congress, was donated to the state for university purposes. This being accomplished, the University possesses a site second to none on which to place an Astronomical Observatory.

The University site now comprises six hundred and forty acres of land.

FEDERAL LAND GRANTS.

There was granted to the State of Montana for university purposes by the United States Government, forty-six thousand and eighty acres of land. This land has all been selected and the selections approved.

Of these selections, 1,587 acres were classified as timber land; 31,217 acres as grazing land; and 12,286 acres as agricultural land.

Of timber lands, 2,787.18 acres have been sold; of grazing land, 363.93 acres; and of agricultural land, 8,422.07 acres.

The Permanent University Fund is made up of moneys received from the sale of lands. The fund is irreducible, but may be loaned and the interest applied to other purposes.

The University Bond Fund is made up of moneys received from licenses to cut trees, interest on the permanent fund, and rents and leases from agricultural land and grazing land. This

fund is applied exclusively to meeting the interest on the bonds that have been issued with this fund as security.

There was remaining in these funds November 30, the following amounts:

Permanent University Fund.

Cash	$24,428.00
Bonds	81,000.00
Warrants	
Total	$105,428.00

University Bond Fund.

Cash	$27,961.24
Warrants	
Total	$27,961.24

PROGRESS OF THE UNIVERSITY.

The Development of Departments.

The University started in 1895 with a Department of History and Literature, a Department of Ancient Languages, a Department of Modern Languages, a Department of Mathematics, a Department of Applied Science, and a Preparatory School.

The Department of Applied Science was cared for by the Professor of Modern Languages, and the Department of History and Literature by the President of the University.

These departments were all that it seemed possible to organize under conditions existing at that time. It was the policy of the management, starting from these departments, each of which contained a large range of subjects, to differentiate the work and create new departments as the attendance of students would demand and the amount of finance permit. This policy has been rigidly carried out.

The School of Applied Science has become a department of Mechanical Engineering, and is now under the control of a Professor who gives his whole time to this work and has his own assistants.

The Department of Natural Science has given us a Department of Chemistry, a Department of Biology and a Department of Physics and Geology.

Instead of a Department of History and Literature, we have Departments of Literature, Elocution, History and Philosophy, and Psychology and Methods.

Departments of Free Hand Drawing and of Physical Culture have been added to the curriculum.

At present the course of study comprises fourteen departments and two schools. The list is as follows:

Departments—Chemistry, Physics and Geology, Biology, Mathematics, Literature, English and Rhetoric, History and Philosophy, Psychology and Methods, Free Hand Drawing, Ancient Languages, Modern Languages, Elocution, Physical Culture, and Music.

Schools—A school of Mechanical Engineering and a Preparatory School.

INFLUENCE ON THE PUBLIC SCHOOL SYSTEM.

The influence of the University in strengthening and unifying the public school system of Montana has been very marked, and is becoming more and more apparent.

Since the establishment of the University a system of Accredited High Schools has been organized, and also a uniform course of study has been placed in the common schools of the state.

The boys and girls completing the course of study in the common schools enter the high schools, or the preparatory school of the University.

Those who complete the High School course or the course in the preparatory school, are entitled to enter the collegiate department of the University without examination.

During the present year the great majority of those entering the Preparatory School have presented evidence of graduation from the common school course. Of the twenty-two accredited High Schools, seventeen have representatives in the collegiate departments of the University.

ATTENDANCE.

There were enrolled in the various schools of the University for the fiscal year ending December 1, 1904, as follows:

Regular session, excluding the School of Music..	323
Biological Station	21
School of Music (piano)	57
School of Music (violin)	24
Grand total	425
Counted twice	34
Net total	391
Deduct School of Music not enrolled in other departments	31
Total academic enrollment.....	360

For class enrollment in the various classes taught in the University, see department reports in appendix.

The total enrollment exclusive of the School of Music for the several fiscal years since the opening of the University has been as follows:

For the year ending Nov. 30, 1895.....	118
For the year ending Nov. 30, 1896.....	176
For the year ending Nov. 30, 1897.....	200
For the year ending Nov. 30, 1898.....	214
For the year ending Nov. 30, 1899.....	203
For the year ending Nov. 30, 1900.....	243
For the year ending Nov. 30, 1901.....	253
For the year ending Nov. 30, 1902.....	347
For the year ending Nov. 30, 1903.....	356
For the year ending Nov. 30, 1904.....	360

FINANCIAL STATEMENT.

A statement of the receipts and expenditures for the year ending December 1, 1904:

From legislative appropriation, 1903-4...	$44,610.00	
Unexpended balance in Library Fund....	3,069.39	
Matriculation fees first semester, 1904-5..	1,470.00	
Unexpended balance in Construction Fund	670.17	
Total		$49,819.56

Expenditures.

Advertising	$ 390.40	
Biological Station	415.92	
Employes and assistants	4,415.85	
Equipment for departments	1,694.58	
Expressage, drayage and freights	770.25	
General expenses	1,175.17	
Geological expedition	165.10	
Gymnasium	298.02	
Improvements	1,890.77	
Labor	762.00	
Library	990.49	
Museum	84.64	
Office	563.55	
Printing and stationery	1,444.68	
Repairs	381.51	
Salaries	26,174.49	
Supplies for departments	1,182.55	
Transportation	33.75	
Traveling expenses	395.15	
University exhibits	422.70	
Water, Heat and light	3,436.74	
Woman's Hall	848.10	
Total		$47,936.41
Unexpended balance in Library Fund		$1,883.15

THE ATHLETIC FUND.

Receipts.

From athletic fees, second semester, 1903-4	$108.00
From athletic fees, first semester, 1904-5	170.00
Total receipts	$278.00

Expenditures.

For athletic supplies and equipment, second semester, 1903-4	$100.00
For athletic supplies and equipment, first semester, 1904-5	178.00
Total expenditures	$278.00

All of which is respectfully submitted,

OSCAR J. CRAIG,
President.

The foregoing report, the financial statement and the recommendations concerning the work of the University are hereby approved.

J. H. T. RYMAN,
HIRAM KNOWLES,
THOS. C. MARSHALL,
Executive Committee of the State University.

APPENDIX

EXTRACTS FROM DEPARTMENT REPORTS.

DEPARTMENT OF LITERATURE.

Frances Corbin, B. L., Professor.

During the past year no important changes have been made in the department.

The students, as a whole, have worked faithfully and have kept in view the end noted in previous reports; the practical, the informational and the cultural object of the study.

The work is still carried on by lecturers and by library methods.

The yearly increase of books in the Library is greatly appreciated by the department, as it enables students to do the work more easily and with a greater degree of satisfaction.

The enrollment in the classes of this department has been as follows:

Semester beginning February 10, 1904:

Literature II—College	24
Literature IV—College	5
Literature VI—College	5
Literature VIII—College	15
Special Literature—College	1
Thesis	2
Third Preparatory Litreature	25

Semester beginning September 14, 1904.

Literature I—College	14
Literature IV—College	6
Literature V—College	15
Literature VII—College	10
Thesis	1
Special Literature—College	2
Third Preparatory Litreature	25

DEPARTMENT OF ENGLISH AND RHETORIC.

James S. Snoddy, A. M., Instructor.

The work of this department is two-fold: (1) practice in the writing of English; (2) study of style in English prose, study of the mechanism of English verse, and criticism of the different forms with reference both to their structure and their aesthetic value.

Enrollment.

Semester begins February 5, 1904.

Preparatory—

English Composition (first year)	26
English Composition (second year)	39

College—

Rhetoric II (second semester)	22

Semester beginning September 14, 1904:

Preparatory—

English Composition (first year)	22
English Composition (second year)	24

College—

Rhetoric I (first semester)	50
English Versification	7

REPORT OF DEPARTMENT OF LATIN AND GREEK.

William M. Aber, A. B., Professor.

The following report for the year ending December 1, 1904, is respectfully submitted:

Students enrolled in classes, Semester beginning February 10, 1904.

First Preparatory Latin	27
Second Preparatory Latin	14
Third Preparatory Latin	8
First year Collegiate Latin	4
Second year Collegiate Latin	8
Roman Life	5
Greek	1

Semester beginning February 14, 1904.

First Preparatory Latin	15
Second Preparatory Latin	11
Third Preparatory Latin	8
First year Collegiate Latin	8
Second year Collegiate Latin	6
Third year Collegiate Latin	5
Greek Life	8
Greek	1

With few exceptions good work has been done.

DEPARTMENT OF MODERN LANGUAGE.

Frederic C. Scheuch, B. M. E., A. C., Professor.

The work given in the above named department since the last annual report made to the President, has been the following:

German.

Course I. Began the study of Joynes-Meissner's German Grammar and Joynes Reader.

Course II. Finished Syntax of Joyne's Grammar and read Drei Kleine Lustspiele. Some conversation and composition work was also given.

Course III. The readers used were Wilhelm Tell and at sight Immensee Das Junge Blut. Conversation once per week.

Course IV. Readers used were: Wallenstein, by Schiller, lectures in the German language on German daily life. Conversation and composition twice per week.

Course V. Goethe's Faust was read; recitations were carried on in German, the following sight readers were used: Geschichten aus Deutschen Staedten, Aus dem Reich Friedrichs des Grossen.

French.

Course I. Finished Chardenal's Complete Grammar as far as irregular verbs.

Course II. The class finished the above grammar and took as a beginning reader L'Abbe Constantin, with some work in composition and conversation.

Course III. Colomba was read, also Tulipe Noire. Conversation and composition was given once per week.

Course IV. Read Les Miserables. Two hours per week were devoted to conversation.

Course V. Mademoiselle de la Seigliere was read by sight, also Daily French Life.

Course VI. Consisted of special work given in French reading in connection with the Department of Geology for thesis preparation.

Spanish.

Course I. Monsants and Languellier's Spanish Grammar was begun, three recitations per week.

Course II. Is a continuation of Course I and La Vida es Sueno was taken as a reader.

Courses III, IV and V were not given on account of lack of time.

The courses in Spanish are purely elective.

In the Preparatory, two years' work in German has been planned. Those finishing this work may enter College German III, but they do not receive credit for College Courses I and II.

The first Preparatory is being taught by Miss Whitney.

Summary of Classes.

		From Feb. 10, '04.	Sept., '04, to Date.
German	Course I	..	27
	Course II	17	..
	Course IV and III	11	7
	Course V	3	9
French	Course II and I	16	12
	Course IV and III	0	6
	Course V	..	6
	Course VI	1	..
Spanish	Course I	..	6
	Course II	..	..
	2d Preparatory German.	6	6
	3d Preparatory German.	5	..
	Total	68	79

THE DEPARTMENT OF FREE HAND DRAWING.

Eloise Knowles, Ph. B., Instructor.

The Drawing Department changed its abode the first of the year. It now occupies the south end of the third floor of University Hall. The walls are hung with green burlap, the ceiling is tinted cream, and with its pictures, casts and bright colored still life, the room makes a pleasing and satisfactory studio. Besides a new case of lockers and two dozen drawing boards, a number of new draperies for backgrounds and some brass and Japanese ware have been added to the equipment.

The work does not differ essentially from previous years, but has been rearranged so as to include eighteen courses. This change was thought advisable because it helps to define more exactly the elective work.

The Faculty has removed the course in required drawing from

the college to the preparatory department. It is now given in both the second and third preparatory years, two and a half hours per week. This year as a transitional feature both college and preparatory students are taking the work, making the department unusually full.

The college elective classes are in a satisfactory condition, a new departure being a regularly posed model one afternoon a week.

The classes in the History of Art continue as formerly, the History and Painting being presented last semester, and both the History of Architure and the History of Painting this semester.

The art magazines taken this year are:

The Craftsman.

The International Studio.

The Masters in Art.

The Brush and Pencil.

The number of students enrolled for the year ending November 30, 1904, is as follows:

Semester beginning February 10, 1904:

Course II. Required Drawing	30
Course III. Elective Work	4
Course IV. Elective Work	9
Course VIII. History of Painting	5
Total	48

Semester beginning September 14, 1904:

Required Drawing, College students	24
Required Drawing, Second Preparatory	20
Required Drawing, Third Preparatory	27
Course I. Black and White work	1
Course III. Black and White work	1
Course V. Water Color	3
Course X. Oil Painting Oil Painting	1
Course XV. History of Architecture	2
Course XVII. History of Painting	1
Total	80

PREPARATORY HISTORY.

Semester beginning February 10, 1904.

First Preparatory, History	29
Second Preparatory, History	37

Semester beginning September 14, 1904.

First Preparatory, History	21
Second Preparatory, History	22

DEPARTMENT OF ELOCUTION AND PHYSICAL CULTURE.

Ruth Elise Kellogg, Instructor.

Elocution.

The work in this department is the same as in previous years. There are four regular courses in Elocution, a course in Preparatory Elocution and a course in Oratory and Debate.

Course I in Elocution has been made a requirement for graduation in all courses of study except the course in Mechanical Engineering.

The enrollment in this department is as follows:

Semester beginning February 10, 1904.

Preparatory Elocution	9
Oratory and Debate	6

Semester beginning September 14, 1904.

Elocution I	18
Preparatory Elocution	2
Oratory and Debate	6

Physical Culture.

This work has been placed on a basis of two (2) hours per week throughout the preparatory course and the first two years in the collegiate courses.

The enrollment follows:

Semester beginning February 10, 1904.

Collegiate Class	24
Preparatory Class	43

Semester beginning September 14, 1904.

Collegiate Class	35
Preparatory Class	30

DEPARTMENT OF MATHEMATICS.

Cynthia E. Reiley, B. S., Professor.

As stated in a previous report, the aim of the instruction in this department is to develop the habit of exact, continued and independent reasoning; to cultivate the imagination; to train the student to apply theory to practical problems; to secure accuracy and rapidity in numerical computations; to develop the habit of concise, logical statement or argument and conclusion; and to furnish the facts necessary in the pursuit of studies having a mathematical basis.

To attain these ends, students are working faithfully and earnestly with a constantly increasing interest.

The enrollment for the semester beginning February 10, 1904, is as follows:

Algebra, First Preparatory	31
Plane Geometry	41
Solid Geometry	23
Higher Algebra	12
Calculus	9

For the semester beginning September 14, 1904, as follows:

Arithmetic, First Preparatory	7
Algebra, First Preparatory	20
Algebra, Second Preparatory	21
Plane Geometry	27
Trigonometry	31
Analytitic Geometry	10
Calculus	4

The work in surveying has been transferred to the Department of Mechanical Engineering.

DEPARTMENT OF PHYSICS AND GEOLOGY.

Jesse P. Rowe, M. A., Professor.

For the past year this department has pushed its work along the lines as given in previous reports. It is highly gratifying at this time to be able to report a material increase in both the Physics and Geology classes. This is especially the case in College Physics and Geology I. Also to report a substantial acquisition of new Physics apparatus and Geological material, both by purchase and collecting.

The department has added to its equipment during the past year materially, as follows: One spectrometer and goniometer (Fuess); one holiostat with clock movement; 200 lantern slides; 105 petrographic slides; a systematic collection of fossils from the National Museum; 75 new economic minerals; one Parr Coal Calorimeter and much minor material both Physics and Geology.

From the University Summer Geological Expedition several hundred Cretaceous, Carboniferous and Jurassic invertebrate fossils were added to the already large collection. Also many specimens of building stones, clays, coal and lignites, limestones, gypsums, etc., were secured for the museum.

The department library has been made much more complete by the addition of several volumes of German, French and American standard works, both in physics and geology. The geological library has been especially strengthened by numerous exchanges with the various state geological surveys and the universities and colleges of the United States.

The department has arranged a collection of representative rocks, materials and fossils for free distribution to accredited High Schools of the state. In a mining state like Montana the subjects of Physiography and Geology should be given as much attention as many of the other sciences. We hope, by the distribution of geological material to the various High Schools of the state, to come better in touch and sympathy with their work and aims.

The quality of the work done by the students in this department is highly satisfactory and on a par with similar work done in any institution of our sister states. However, the work of this department is entirely too heavy for one man to do well, and accomplish much in arranging, cataloguing and labeling museum material and other work which the head of the department believes is of vital importance to the University.

Besides the regular work of the year, the head of the department has written "Pseudomorphs and Crystal Cavities" for the Journal of Science; "Montana Gypsum Deposits" for the American Geologist, and has ready for publication a large bulletin on "Montana Coal Fields." Also written many smaller articles to scientific journals and the state press.

The head of the department also conducted a five weeks' summer geological expedition for the University, and secured much

new and valuable material for the Museum. See Report to President O. J. Craig.

The following are the classes organized by the department during the past year and the enrollment in each class:

Second semester, 1904, from February to June.

Physics, Third Preparatory	22
Physics I—College	2
Geology I	5
Advanced Geology	1
Thesis	1
Graduate Students	3

First semester, 1904-5, from September 15 to February.

Physics—Third Preparatory	30
Physics I—College	11
Geology I	8
Mineralogy	2
Economic Geology	1
Thesis—Geology	1
Graduate—Geology and Physics	1

DEPARTMENT OF CHEMISTRY.

William D. Hawkins, A. B., Professor.

The growth of the department of Chemistry during the present year has exceeded all expectations. During the present semester the number of students has been so great as to make it necessary to divide the laboratory classes into two sections. It is recommended that a larger laboratory room be provided for the class in general chemistry, since the present laboratory is not large enough to accommodate even half of the students in the class at one time. More air space should be given in a chemical laboratory than is necessary in any other school room, since in a small room the fumes are so concentrated as to be injurious to the health of both students and instructors, while in large, well ventilated rooms the fumes become so diluted as to produce no injurious results. The increase in the number of students will materially increase the amount of breakage, and all of the other expenses of the laboratory.

The greatest change in the methods of instruction has been

made in the course in qualitative analysis. The work, as now given, is based upon the most modern theories of ionization. This work gives the student a deeper insight into the nature of chemical reactions than was possible under the older methods.

The professor of chemistry is now engaged in a research on Molecular Rearrangement and the Theory of Catalytic Action. Several new compounds have been discovered, and these will be used to test the laws of chemical action.

Quite a number of waters from different parts of the state have been analyzed in order to determine as much as is possible their relative value for domestic and industrial use. As a whole, the waters of this state are very free from contamination. When this work is completed, the results will be of great value to the citizens of the state, as well as an excellent advertisement for the state as a whole. The greatest difficulties have been to regularly get samples, and to find a room free from gases which can be used by the department.

The professor of chemistry spent the summer in the graduate school of the University of Chicago.

Students in Chemistry.

Semester beginning February 6, 1903.

General Chemistry	18
Qualitative Analysis	12
Assaying	5
Quantitative Analysis	4
Organic Chemistry	2
Physical Chemistry	1
Physiological Chemistry	1
College Physics	3
Water Analysis	1

Semester beginning September 14, 1904.

General Chemistry	52
Qualitative Analysis	11
Quantitative Analysis	1
Physical Chemistry	3
Analytic Mechanics	6
Organic Lectures	1
Organic Research	1
Inorganic Research	1

DEPARTMENT OF MECHANICAL ENGINEERING.

Robert Sibley, B. S., Professor.

In addition to the enlargements in the curriculum, as noted in our report of last year, one or two more courses have been added during the year just ended. Believing that the young engineer of the future in Montana will have to cope with peculiar problems in electrical engineering and hydraulic work, two new courses have been added during the past year to work toward this end. During the past year the work progressed most satisfactorily. The students in moulding and foundry work made the patterns and moulds for twenty-four twelve-pound shot hammers and presented them to the captains of the visiting High School teams on the occasion of the Intercollegiate Meet held on the University Campus during May.

The enrollment during September this year exceeded all expectation. In the Preparatory Department the enrollment showed a slight increase, while those taking collegiate work have almost doubled in number this year. As a result we have found it very difficult to arrange classes to accommodate the students in the shops. This difficulty has been met, however, by running the shops on Saturday morning.

The Mechanical Engineering Department will graduate one student this year, Mr. John R. Haywood. He is taking as his thesis, "The Design and Specifications for a Power House and Electric Lighting Plant for the University." Detail drawings will be made, showing arrangement of operating mechanisms, etc.

The position of assistant in this department is being filled very competently by Mr. John R. Haywood. Mr. Richard Kessler, the University Engineer, has charge of taking care of the department engine, lubricating line and countershafting, keeping belting in order and helping in various other ways.

The class in surveying completed a map of the University Campus five by six feet, showing in detail by coloring and convention the location of all buildings, driveways, walks, trees, athletic field, etc. This is now on exhibition at the St. Louis Fair.

In the shops, in addition to the regular class work, there has been a considerable amount of work done for the University, such as shelving for Woman's Hall, tables for the Department

of Physics, etc. It is customary, when anything of that sort is needed, to turn the work over to the students in this department.

The following is a list of classes taught in the department during the past year, with the number of students in each:

Semester beginning February, 1904.

Machine Shop Practice	8
Forging and Blacksmithing	4
Second Prep. Drawing	12
Third Prep. Drawing	6
Wood Shop Practice	11
Pattern Making and Moulding	9
Technical Instruction and Discussion	15
Kinematics	1
Strength of Materials	3
Electric Machinery and Construction	2
Graphic Statics	6
Descriptive Geometry	9
Surveying	10
Analytic Mech.	3
Freshman Drawing	4

Semester beginning September, 1904.

Second Preparatory Drawing	11
Third Preparatory Drawing	6
Graphic Statics	5
Descriptive Geometry	8
Machine Design	7
Pattern Making and Moulding	3
Lectures on Wood Shop	17
Wood Shop Practice—	
(a) Bench Work	12
(b) Lathe Work	10
Machine Shop Practice	3
Forging and Blacksmithing	13
Freshman Mech. Drawing	14
Electrical Mach. Design	1
Surveying	5
Advanced Surveying	2
Thermodynamics	1
Hydraulics	1
Alternating Current Mach.	1

DEPARTMENT OF PHYSICAL TRAINING.

H. B. Conipeau, Director.

Much good and enjoyable work has been done in the gymnasium since last report. In the second semester of last term the classes were arranged as in the first semester. This semester the Preparatory students have gymnasium work on Mondays at 10:30 a. m. and on Wednesday at 1:30 p. m. In this class are thirty-two students. The Collegiate students meet on Tuesday at 9:30 a. m. and Friday at 8:30 a. m. In this class are forty-three students. All students who are out for football regularly are excused from gymnasium, but quite a few took the gymnasium work and football.

This semester the work has been in the nomenclature of gymnastics and military drill. This work has been very interesting to the students and the attendance at the gymnasium has been much better than heretofore.

The track team and baseball teams of last semester were all that could be expected. Much interest was shown in each branch of sport and an excellent spirit existed. The work was very beneficial to all the students that took part in the different sports.

The football squad this semester consisted of twenty-nine men. A most excellent spirit existed and a friendly rivalry that promises much for the future was shown. This work has been of great benefit to the men. Some of the men, by the proper amount of work and sleep and the proper food, have increased in weight twenty pounds and more.

The second team has a most excellent record and it has been the means of developing the Varsity into the best team that has represented the University in quite a few years.

The basket-ball team defeated the only team it played in good form and by a very respectable score and much interest was shown by the young men.

Above all, the department has tried to encourage manly sport and for sport's sake, and the building up of the young men physically, mentally and morally.

Gymnasium Classes.

Semester beginning February, 1904.

Monday—Club swinging	19
Tuesday—Club swinging	19
Thursday—Club Swinging	19
Friday—Club swinging	19
Monday—Dumb bells	11
Wednesday—Dumb bells	11
Thursday—Dumb bells	11
Friday—Dumb bells	11
Tuesday—Tumbling or matt work	14
Friday—Tumbling and matt work	16

Semester beginning September, 1904.

Preparatory students—	
Monday—Nomenclature of Gymnastics	34
Wed.—Marching or military methods	34
College Students—	
Tuesday—Nomenclature of Gymnastics	43
Friday—Marching or military methods	43

DEPARTMENT OF BIOLOGY.

Morton J. Elrod, M. A., M. S., Professor.

General Announcement.

The plan and scope of the work has been outlined in previous reports, and need not here be repeated. An earnest effort is made to keep abreast of the advancement which is so pronounced in the subjects included in the department work, and thus give to the students as good facilities so far as courses are outlined as may be had in other institutions. The amount of work given in the department has not been increased over the past year, because the department is unable to handle additional classes. However, one new class was organized at the beginning of the present school year, another being temporarily dropped to make way for the new subject.

By the action of the Faculty the Preparatory Physiology has been discontinued, and hence does not appear in this report.

Equipment Added—During the past year some additions were made to the equipment. A tilting stand for photography, permitting of various improvements in the photography of scien-

tific specimens, was purchased from the makers, The Folmer & Schwing Company, New York. A frame for retouching negatives and coloring lantern slides was added, with some smaller pieces of apparatus. Some additional chemicals and glassware were found necessary, and were added to those already in stock. The amount spent for equipment during the year was small, most of the funds being consumed in the purchase of necessary supplies.

Classes—An examination of the table of classes appended to this report shows that the department has taken care of six classes during the year, all including laboratory work, thus demanding much time and preparation for the laboratory work. The classes handled are imperatively demanded, if the University is to keep pace with the demands of the day, and it is not possible to carry on so much class and laboratory work and at the same time carry on lines of original study, so vital to the advancement of the institution and so important in a new country.

In September of the present year a class in Bacteriology was organized, with four students. The equipment of the department makes this work possible, and it is believed the study will prove both profitable and practical. The present arrangement of the class in the preparatory course of study is unsatisfactory. From a disciplinary standpoint the study of biology in the preparatory is equal to that of other subjects, and should be placed as an option as it is now in our course. This gives to the class a smaller number than its importance deserves, and affords little opportunity to show what can be done in the subject.

The class in photography has proven to be of value to the students and of practical use to the University. The necessary illustrations for publications are made almost entirely within the University. A practical subject is given in a scientific manner, lectures and recitations accompanying the practical work.

The St. Louis Purchase Exposition—Much of the exhibit sent by the University to the fair was prepared by the department, ably assisted by Professor J. P. Rowe, of the Department of Physics and Geology, and Miss Eloise Knowles, of the Department of Art. The exhibit consists of a large series of photographs, six and one-half by eight and one-half inches, arranged on large cards, which have been placed in suitable cabinets. In

addition to these photographs, about three dozen enlargements were made, eighteen by twenty-two inches, and suitably framed. The framing and packing was looked after by Professor William M. Aber. Another set of photographs and enlargements has been made for the fair at Helena, which was placed on exhibition. Many photographs have been used for illustrations in the daily press and in the University publications, while the negatives have been used in another way, for making lantern slides.

Farmers' Institutes—Several weeks were spent in the state last year at farmers' institutes, by invitation of the State Board of Farmers' Institutes. This naturally detracts from the regular class work and makes the duties heavier both before and after. As there is urgent need for such work in the state the time has been given, with your approval, and several lectures have been prepared for this particular work. The value of this work will increase during the coming years. In the beginning of the work the attention has to be attracted, and much thought must be centered on the work to bring it before the people as it deserves.

Summer Work—This is outlined in more detail in the report of the Biological Station. Suffice it to say that the summer has been spent for the past six years in the field, largely in the western part of the state. A large amount of valuable material has been secured, and much valuable information gathered. The material is deposited at the University, and adds greatly to the equipment for study. This summer's work is of more importance than would at first appear, from the following considerations:

In a new country there must of necessity be much stress on the practical side of life. There is urgent need of a place where encouragement is given those who wish to do things and learn things for the additional pleasure they get from this study in every day life. There is no school so good as that where things may be seen as they are, and where the struggle in nature may be studied, thus making lighter and easier the burdens of the day and year.

Again, there is need of a place where teachers may have opportunity to mingle with kindred spirits and have the flagging enthusiasm kindled anew. In this country of magnificent distances, where one so seldom meets those engaged in similar

occupations, this opportunity is a great boon, and its value will be more appreciated in the years to come than it is now.

The natural way to study is to see and study things as they are. The laboratory must be supplemented by tramps in the woods and fields, and with proper guidance this will produce results of the greatest value and usefulness. Much of our present laboratory work will, I believe, change to outdoor study. The relationship of environment to the living object is a great study and which will afford opportunity for continued investigation, since both the environment and the object are in a state of constant change. Such study will, however, demand more time on the part of the instructor, as also a wide scope of study, and can be effected only when the public, through those who have charge of educational institutions, shall be brought to see its necessity and grant suitable time for the work.

It is felt that this explanation is due, so that those who have the responsibility and the authority may fully understand the thought in mind in organizing and prosecuting this line of study.

Publications—Several publications of greater or less interest have appeared during the past year. Bulletin Biographical Series No. 6, entitled "Additional Notes on the Summer Birds of Flathead Lake," has been issued. This has special reference to Swan Lake. It completes the work of Principal P. M. Silloway, of Lewistown, for the five seasons he has been engaged. It contains about thirty pages, with five plates, listing all the birds found.

Bulletin Biological Series No. 7, "Lichens and Mosses of Montana," has been issued. This lists about 125 mosses and lichens, with five plates.

Two articles have been given to science, which have been printed. The first is the address to the Montana Academy of Sciences, Arts and Letters, on the subject, "The Resources of Montana and Their Development," covering seven pages. The second is a report of the work of the University of Montana Biological Station, covering thirteen pages.

The article for The Encyclopedia Americana on Montana was prepared at the request of the publishers and has appeared. It covers seven pages.

The second annual report of the State Farmers' Institutes contains two articles, one entitled "Birds in Their Relation to

Agriculture," with several plates; the other entitled "The Wealth of Montana as Shown by Statistics." These have been printed separately and have been called for from all parts of the country until the separates are almost exhausted.

Numerous scientific articles have been prepared for the daily press, which have appeared from time to time.

The following scheme shows the number of classes and students in each during the last fiscal year:

Semester beginning February, 1904.

General Biology, required	20
Botany	7
Zoology	2
Entomology	3
Photography	4
Graduate Research	1
Total	42
Summer laboratory at Flathead Lake	20

Semester beginning September, 1904.

Preparatory Biology	3
Collegiate—	
General Biology, required	19
Zoology	2
Photography	8
Bacteriology	4
Research, Botany	1
Total	37

REPORT OF THE LIBRARIAN.

To the President of the University:

Report of the University Library for the year ending November 30, 1904.

The growth of the library has steadily continued during the year. The number of books in the library is 17,300 volumes, which represents an addition of 972 volumes during the year. Very little unoccupied shelf room remains in the stacks. The reading room is constantly filled with readers.

There were catalogued during the year 964 volumes and 200 pamphlets, 2,987 cars were written and added to the catalogue;

1,500 cards were received from the Superintendent of Documents for United States Government publications.

As a step toward filling up gaps existing in various sections, three complete sets of periodicals were purchased. It is desirable that complete sets of technical periodicals be obtained as they are indispensable in the research work of advanced students.

The number of books circulated for home use amounted to 3,357 volumes, as students have access to the stacks no record of use within the library could be made.

Though the revision of the catalogue is not yet complete, there is a noticeable growth in the number of students who make use of it. Libraries in the various departments are examined once a year. In all eleven books were lost, one from the Department of Biology and ten from the Department of Chemistry.

New books are placed on the shelf near the librarian's desk and remain there for at least two days before being sent to the department libraries or scattered to the various shelves in the general library. Students are at liberty and invited to examine all new material.

The library received gifts of books, pamphlets and periodicals from many individuals, the departments of the government, various societies, agricultural experiment stations and libraries.

The official publications of the United States Government are regularly received.

Statistics.

No. of volumes in library (exclusive of public documents)	12,802
No. of pamphlets	6,998
No. of volumes added during the year	802
No. of volumes added by purchase	707
No. of volumes added by gift	95
No. of volumes lost from general library	3
No. of volumes lost from Chemistry Department	10
No. of volumes lost from Biology Department	1
No. of periodicals regularly received from all sources	157
No. of periodicals subscribed for	118
Gifts of Montana periodicals	29

The aids in finding material in the library on any subject are:

The card catalog—In which a record of all books in the libra-

ry may be found alphabetically arranged by author, title and subject.

The shelves—All books on one subject stand together, and books on related subjects are generally on adjacent shelves.

Indexes—Poole's Index to periodical literature, 1882-1902; Readers' guide to periodical literature, 1902 to date.

Rules not found in general printed rules:

Books specially referred to by any professor become temporarily reference books and may be taken from the library under the same condititons as reference books.

Writing or marking in books belonging to the library, or their mutilation in any manner, is forbidden.

Library hours, on school days, are from 8:30 a. m. to 4:30 p. m.; on Saturday from 9:00 a. m. to 12:00 m.

The following is a list of the periodicals on file for the use of members of the University.

American Architect.
American Chemical Journal.
American Electrician.
American Geologist.
American Journal of Science.
American Journal of Physiology.
American Machinist.
American Naturalist.
American Physical Educational Review.
Analyst.
American School Board Journal.
Analytische Chemie Zeitschrift Fur
Annals and Magazine of Natural History.
Anorganische Chemie, Zeitschrift fur.
Anorganischen Chemie.
Archaeology.
Art Interchange.
Assoc, Engineering Societies, Journal of.
Athenaeum.
Atlantic Monthly
Auk.
Bird-Lore.
Bookman.
Botanical Gazette
Brick.

Brush and Pencil.
Cassier's Magazine.
Century.
Chautauquan.
Chemisches Central Blatt.
Chemique Societe de Paris.
Classical Review.
Cosmopolitan.
Craftsman.
Critic.
Current Literature.
Deutsche Rundschau.
Dial.
Education.
Educational Review.
Electrical World and Engineer.
Engineering (London).
Engineering Magazine.
Engineering News and American Railway Journal.
Engineering and Mining News.
Entomological News.
Fels zum Meer.
Fliegende Blaetter.
Forest and Stream.
Forum.
Foundry.
Genera Insectorum.
Harper's Magazine.
Harper's Weekly.
Illinois Staats Zeitung.
Independent.
International Studio.
Journal of American Chemical Society.
Journal of Chemical Society (London).
Journal of Geology.
Journal of the Royal Microscopical Society.
Ladies' Home Journal.
Lamp.
Library Journal.
Literary Digest.
Literary World.

Living Age.
Literary News.
McClure's.
Masters of Art.
Mathematics.
Mind and Body.
Mines and Minerals.
Mining World.
Monist.
National Geographic Magazine.
Nature.
Die Naturlichen Pflanzenfamilien.
Nautilus.
Neurology, Comparative.
N. Y. Botanical Garden.
Nineteenth Century.
North American Review.
Ornithology, American.
Outing.
Outlook.
Photographic Times (Bulletin).
Physical Review.
Plant World.
Poet Lore.
Political Science Quarterly.
Popular Science Monthly.
Power.
Psychology.
Public Libraries.
Public Opinion.
Public Library Quarterly.
Public School Journal.
Publisher's Weekly.
Queen's Quarterly.
Railway and Locomotive Engineering.
Reader's Guide to Periodical Literature.
Review of Reviews.
School and Home Education.
School of Mines Quarterly.
School Review.
Science.

Scientific American and Supplement.
Scribner's.
Success.
Torrey Botanical Club.
Torreya.
Uber Land und Meer.
Western Mining World.
World's Work.
Zeitschrift fur Wissenschafliche Mikroscopie.
Zoologischer Anzeiger.
Zoologist.
Anaconda Standard.
Helena Independent.

The following papers are donated by their respective publishers:

The Belt Valley Times.
The Big Timber Pioneer.
The Yellowstone Leader, Big Timber.
The Billings Times.
The Sentinel, Boulder.
The Avant-Courier, Bozeman.
The Tribune-Review, Butte.
The Butte Evening News.
The Reveille, Butte.
The Chinook Opinion.
The Dillon Examiner.
The Dillon Tribune.
The Forsyth Times.
The Glendive Independent.
The Western News, Hamilton.
The Ravalli Republican, Hamilton.
The Havre Plaindealer.
The Kalispell Bee.
The Inter-Lake, Kalispell.
The Montana Daily Record.
The Independent, Miles City.
The Madison County Monitor.
Madisonian.
The Philipsburg Call.
Philipsburg Mail.
Pony Sentinel.

The Rocky Mountain Husbandman.
The Silver State.
The Stevensville Register.
The Northwest Tribune, Stevensville.
River Press, Fort Benton.
Rosebud County News.
The Rocky Mountain Leader.
Seattle News-Letter.

Exchanges.

The library receives publications from 242 Universities, Learned Societies, and private individuals in this country and abroad. A large amount of valuable material is thus obtained for a nominal expenditure.

No. of volumes received 95
No. of pamphlets 395

M. G. BUCKHOUSE.

LIST OF EXCHANGES.

Foreign.

Aarau, Switzerland—
Naturforschende Gasellschaft.
Acireale, Italy—
Accademia di Scienze, Lettre ed Arti degli Zelanti.
Adelaide, South Australia—
Royal Geographical Society.
Amsterdam, Netherlands—
Genootschap ter Bevordering van Natuur, Genees-en Heelkunde.
Koninklijke Akademie van Wetenschappen.
Amiens, France—
Societe Linneennex du Nord de la France.
Annecy, France—
Societe Florimontane.
Anvers, Belgium—
Societe Royale de Geographie.
Augsburg, Germany—
Naturwissenschaftlicher Verein fur Schwaben und Neuburg.
Bamberg, Germany—
Naturforschende Gesellschaft.

Barcelona, Spain—
Real Academia de Ciencias y Artes.
Barrow-in-Furness, England—
Naturalists' Field Club.
Basel, Switzerland—
Naturforschende Gesellschaft.
Batavia, Netherlands Indies—
Koninklijke Naturkundige Vereeniging in Naderlandsch-Indie.
Belfast, Ireland—
Natural History and Philosophical Society.
Bergen, Norway—
Bergens Museum.
Berlin, Germany—
Botanischer Verein der Provinz Brandenburg.
Deutscher Verein zum Schutze der Vogelwelt.
Gesellschaft Naturfordschender Freunde.
Kongglich Preussische Akademic der Wissenschaften.
Bern, Switzerland—
Schweizerische Entomologische Gesellscheft.
Beziers, France—
Societe d'Etude des Sciences Naturelles de Beziers.
Breslau, Germany—
Schlesische Gesellschaft fur Vaterlandische Kultur.
Verein fur Unterricht und Erziehung von Taubstummen.
Zeitschrift fur Entomlogie.
Bordeaux, France—
Societe Linneenne de Bordeaux.
Bone, Algeria—
Academie d'Hippone.
Bonn, Germany—
Mineralogisches Museum und Institut der Universitat.
Bourg, France—
Societe d'Emulation, Agriculture, Sciences. Lettres et Arts de l'Ain.
Breslau, Germany—
Schlesische Geselschaft fur Vaterlandische Kultur.
Verein fur Schlesische Insektenkunde.
Zeitschrift fur Entomlogie.

Breunschweig, Germany—
Verein fur Naturwissenschaften.
Brisbane, Queensland—
Geological Survey of Queensland.
Minister of Mines.
Royal Society of Queensland.
Bruxelles, Belgium—
Academie Royale des Sciences.
Societe Belge de Geogrophie.
Societe Belge de Geologie.
Societe Malacologique de Belgique.
Societe Royale de Botanique de Belique.
Budapest, Hungary—
Geologische Gesellschaft fur Ungarn.
K. Ungar. Geologische Anstalt.
Magyar Foldrajzi Tarsaag.
Magyar Tudomanyos Akademia.
Buenos Aires, Argentine Republic—
Museo Nacional de Buenos Ayes.
Sociedad Entomologica Argentina.
Buitenzorg, Java—
Agricultural Experiment Station.
Botanischer Garten.
Bukarest, Romania—
Academia Romana.
Caen, France—
Academie Nationale des Sciences.
Calcutta, India—
Indian Museum.
Royal Botanic Garden.
Cairo, Egypt—
Institut Egyptien.
Cape Town, Cape Colony—
South African Philosophical Society.
Catania, Italy—
Accademia Givoeniadi Seienze Naturali.
Chalon-sur-Saone, France—
Societe des Sciences Naturelles de Saone-et-Loire.
Cherbourg, France—
Societe Nationale des Sciences Naturalles et Mathematics de Cherbourg.

Chester, England—
Chester Natural Science Society.
Christiana, Norway—
Selskab for Videnskabernes Fremme.
Chur, Switzerland—
Naturforschende Gesellschaft Graubundens.
Coimbra, Portugal—
Universidale.
Dijon, France—
Academie des Sciences, Artset Belles-Lettres de Dijon.
Dresden, Germany—
Konigliches Mineralogisch-Geologisch und Prahistorisches Mus.
Verein fur Erdkunde.
Dublin, Ireland—
Royal Dublin Society.
Dusseldorf, Germany—
Naurwissenchaftlicher Verein.
Edinburg, Scotland—
Scottish Microscopical Society.
Ekaterinburg, Russia—
Uralskoie Obshchestvo Lubitelei Iestestvoznonia.
Elberfeld, Germany—
Naturwissenchaftlicher Verein Elberfeld und Barmen.
Emden, Germany—
Naturforschende Gesellschaft.
Erlangen, Germany—
Physikalisch-Medieinische Societat.
Firenze, Italy—
Raale Instituto di Studi Superiori.
Societa Enttomologica Italiana.
Frankfurt-am-Main, Germany—
Senckenbergische Naturforschende Gesellschaft.
Frankfurt-an-der-Oder, Germany.
"Helois."
Freiburgim-Breisgau, Germany—
Naturforschende Gesellschaft.
Fribourg, Switzerland—
Societe Fribourgedise des Sciences Naturelles.
Geissen, Germany—
Oberhessische Gesellschaft fur Natur und Heilkunde.

Geneve, Switzerland—
Globe.
Jardin Botanique.
Societe Botanique de Geneve.
Gorlitz, Germany—
Naturforschende Gesellschaft.
Graz, Austria—
Naturwissenschaftlicher Verein fur Steirmark.
Groningen, Netherlands—
Natuurkundig Genootschap.
Goteborg, Sweden—
Kongliga Vetenskaps och Vitterhets Samkallet.
Gottingen, Germany—
Konigliche Societat der Wissenschaften.
Halifax, Canada—
Nova Scotian Institute of Science.
Hamburg, Germany—
Natuwissenschaftlicher Verein.
Verein fur Naturwissenschaftliche Untelhaltung.
Hamilton, Ontario, Canada—
Hamilton Association.
Haaplem, Netherlands—
Archives Neerlandais.
Fondation de P. Teyler van der Hulst.
Hollandsche Maatschappij van Wetenschappen.
Kolonial Museum.
Hanau, Germany—
Wetterauische Geselleschaft fur die Gesammte Naturkunde.
Hanover, Germany—
Deutscher Seefischerei Verein.
Havana, Cuba—
Real Universidad de la Habana.
Helsingfors, Russia—
Geologiska Commissionem i Finland.
Innsbruck, Austria—
Tiroler Landes-Museum Ferdinandeum.
Jena, Germany—
Jenaische Zeitschrift fur Medicin und Naturwissenschaften.
Universitats-Bibliothek.

Kassel, Germany—
Verein fur Naturkunde.
Kaplsruhe, Germany—
Naturwissenschaftlicher Verein.
Kiel, Germany—
Mineralogisches Institut der Universitat.
Naturwissenschaftlicher Verein fur Schleswig-Holstein.
Kingston, Ontario, Canada—
Queen's University.
Kew, England—
Royal Botanic Gardens.
Royal Herbarium.
Kjobenhavn, Denmark—
Kongegige Danske Videnskabernes Selskab.
Konigsberg, Germany—
Botanischer Verein.
Krakau, Austria—
Akademija Umiejetnosci.
La Plata, Argentine Republic—
Direccion General de Estadistica de lo Provincia de Bueonos Aires.
La Rochelle, France—
Academie des Belles-Lettres, Sciences et Arts de la Rochelle.
Lausanne, Switzerland—
Societe Vaudoise des Sciences Naturelles.
Leeds, England—
Leeds Philosophical and Litreary Society.
Leiden, Netherlands—
Nederlandsche Botanische Vereeniging.
Rijks Geologisch en Mineralogisch Museum.
Leipzig, Germany—
Verein fur Erdkunde.
Lille, France—
Societe Geologiquedu Nord.
Lima, Peru—
Academia de Ciencias Naturales.
Lisboa, Portugal—
Commissao dos Trabalhos Geologicos de Portugal.
Real Observatorio Astronomico de Lisboa.

Liverpool, England—
Liverpool Geological Association.
Liverpool Geological Society.
London—
Aristotleian Society.
British Museum, Natural History Division.
Royal Institute of Great Britain.
Royal Society of London.
Quarterly Journal of Microscopical Science.
Louvain, Belgium—
Universite Catholique.
Lubeck, Germany—
Geographische Gesellschaft.
Lucca, Italy—
Reale Accademia Lucchese di Scienze, Lettere ed Arti.
Madras, India—
Archaeological Survey of Southern India.
Government Central Museum and Library.
Marburg, Germany—
Gesellschaft zur Beforderung der Gesammten Naturwissenschaften.
Universitats Bibliothek.
Madrid, Spain—
Real Academia de Ciencias Exactas, Fiscias y Natu-
Manchester, England—
Manchester Field Naturalist and Archaeologists' Society.
Manchester Geog. Society.
Manchester Literary and Philosophical Society.
Marlborough, England—
College of Natural History Society.
rales.
Manchester, England—
Literary and Philosophical Society.
Manchester Field Naturalists' and Archaeologists' Society.
Marlborough, England—
Marlborough.
Marlborough College Natural History Society.
Marseilles, France—
Societe Scientifique Industrielle.

Melbourne, Victoria—
Geological Society of Australia.
Royal Geographical Society of Australia, Victorian Branch.
Victorian Naturalist.
Mexico, Mexico—
Museo Nacional.
Secretaria de Fomenta, Colonizacion, e Industria.
Sociedad Farmaceutica Mexicana.
Milano, Italy—
R. Instituto pei Sordo-Muti.
Societa d'Esplorazione Commerciale in Africa.
Societa Italiana di Scienze Naturali.
Mons, Belgium—
Societe des Sciences, des Arts et des Lettres du Hainut.
Montevideo, Uruguay—
Museo Nacional.
Montpellier, France—
Academie des Sciences at Lettres de Montpellier.
Montreal, Quebec—
McGill University Library.
Moskva, Russia—
Impr. Moskofskoie Obshchestvo Iestestvo-Ispytatelei.
Nantes, France—
Station Agronomique.
Napoli, Italy—
Societa di Naturalisti.
Anomalo.
Newcastle-Upon-Tyne, England—
Literary and Philosophical Society.
Nijmwegen, Netherlands—
Nederlandsche Botanische Vereeniging.
Norwich, Greenland—
Norfolk and Norwich Naturalists' Society.
Nunberg, Germany—
Naturhistorische Gesellschaft.
Ottawa, Ontario, Canada—
Ottawa Naturalist.
Padova, Italy—
Rivista di Mineralogia e Cristallografit Italiana.

Palermo, Italy—
R. Accademia Palermitana di Scienze, Lettre e Belle-Arti.
Paris, France—
Ministere de l'Instruction Publique et des Beaux-Arts.
Prefecture de la Seine, Second Bureau de Cabinet.
Societe Zoologique de France.
Peuilles des Jeunes Naturalistes.
Perth, Australia—
Geological Department of West Australia.
Perth, Scotland—
Perthshire Society of Natural Science.
Pisa, Italy—
Societa Toscana di Scienze Naturali.
Ploen, Germany—
Biologische Station.
Preston, England—
Preston Scientific Society.
Regensburg, Germany—
Naturwissenschaftdicher Verein.
Riga, Russia—
Gartenbau Verein.
Rio de Janerio, Brazil—
Museu Nacional.
Rome, Italy—
British and American Archaeological Society.
Rotterdam, Netherlands—
Bataafsch Genootschap der Proefondervindelijke Wijsbergeerte.
St. Johns, New Brunswick—
Natural History Society of New Brunswick.
Saharanpur, India—
Botanical Department of Northern India.
Santiago, Chile—
Observatorio Nacinal.
Shanghai, China—
Royal Asiatic Society, China Branch.
Sankt Petersburg, Russia—
Impr. Sankt-Peterburgskoii Botanisheskii Sad.
Institut Imperial de Medecine Experimentale.
Singapore, India—
Royal Asiatic Society.

South Port, England—
Southport Society of Natural Sciences.
St. Gall, Switzerland—
Naturwisenschaftliche Gesellschaft.
Stockholm, Sweden—
Historiska Museum.
Kongliga Svenska Vet enska Akademien.
Klonglia Vitterhets, Historie och Antiquitets Akademien.
Strassburg, Germany—
Kaiserlische Universitats und Landes-Bibliothek.
Sydney, New South Wales—
Anthropological Association of Australia.
Australian Association for Advancement of Science.
Australian Museum.
Geological Survey of New South Wales.
Royal Society of New South Wales.
University of Sidney.
Tacubaya, Mexico—
Observatorio Astronomico Nacional.
Thorn, Germany—
Copernicus Verein fur Wissenschaft und Kunst.
Tokyo, Japan—
Tokyo Botanical Society.
Toluca, Mexico—
Instituto Cientifico v Literario.
Toronto, Ontario, Canada—
Canadian Institute.
Toulon, France—
Societe Academique du Var.
Toulouse, France—
Universite.
Trieste, Austria—
K. K. Astronomisch-Meteorolgisches Observatorium.
Tromso, Norway—
Tromso Museum.
Ulm, Germany—
Verein fur Mathematik und Naturwissenschaften.
Upsala, Sweden—
Kongliga Universitetet.
Kongliga Vetenskaps Societeten.

Utrecht, Netherlands—
Koninklijk Nederlandsche Meterologisch Institut.
Provincial Utrechtsch Genootschap van Kunsten en Wetenschappen.
Valparaiso, Chile—
Direction de la Oficino Hidrojraphia.
Verona, Italy—
Accademia d'Agricoltura, Commercio ed Arti di Verona.
Watford, England—
Hertfordshire Natural History Society and Field Club.
Wellington, New Zealand—
Colonial Museum and Geological Suhvey Department.
Wellington College—
Wellington College Natural History Society.
Weimar, Germany—
Botanischer Verein fur das Gesammte Thuringen.
Wein, Austria—
Chemico-Technische Versuchsstion des Centralvereines fur Rubenzucker-Industrie in der Oesterr, Ungar Monarchie.
K. K. Geologische Reichsanstalt.
K. K. Naturhistorisches Hof Museum.
K. K. Universitats Bibliothek.
K. K. Zoologisch-Botanische Gesellschaft.
Landwirthschaftliche Versuchs-Station.
Section fur Naturkunde des Oesterreichischen Touristen Vereins.
Weisbaden, Germany—
Verein fur Naturkunde.
Winnipeg, Manitoba— ....
Manitoba Historical and Scientific Society.
York, England—
Museum.
Yorkshire Philosophical Society.
Zurich, Switzerland—
Naturforschende Gesellschaft.

Domestic.

Albany University.
American Academy of Arts and Sciences, Boston.

American Antiquarian Society.
American Ornithology, Worcester, Mass.
American Philosophical Society, Philadelphia.
American Ornithologists' Union, Cambridge, Mass.
Ames' Botanical Laboratory, Cambridge.
Arizona University.
Bellevue College, Bellevue, Neb.
Beloit College, Beloit, Wis.
Boston Society of Natural History, Boston.
Bradley Polytechnic.
Brooklyn Institute of Arts and Sciences, Brooklyn.
Buffalo Nat. Science Society, Buffalo.
California University, Berkeley.
Cambridge Philosophical Society, Cambridge.
Carnegie Museum, Pittsburg.
Chicago Academy of Science, Chicago.
Chicago Academy of Sciences and Nat. Hist. Surv.
Chicago University, Chicago.
Cincinnati Soc, of Natural Hist., Cincinnati.
Cleveland Public Library, Cleveland.
Colorado College Sci. Soc., Colorado Springs.
Colorado University, Boulder, Colo.
Cumberland University, Tennessee.
Davenport Academy of Science.
Denison University, Granville, O.
Field Columbian Museum, Chicago.
Franklin Institute, Philadelphia.
Geological Society of America, Rochester.
Hamilton Scientific Association.
Harvard University.
Helena Public Library.
Hendrix College, Conway, Ark.
Illinois Geological Survey.
Illinois State Laboratory of Natural History.
Illinois State Museum.
Illinois University.
Iowa Board of Education.
Iowa College.
Iowa Geological Survey.
Iowa State Historical Society Library.
Iowa University, Iowa City, Ia.

John Crerar Library, Chicago.
Johns Hopkins University.
Kansas Academy of Science.
Kansas State Historical Society.
Kansas University.
Leland Stanford Jr. University.
Lloyd Library, Cincinnati, O.
Los Angeles Public Library.
Manchester Institute of Arts and Sciences, Manchester, N. H.
Massachusetts Institute of Technology, Boston, Mass.
Michigan Academy of Science, Lansing, Mich.
Michigan board of Agriculture, Lansing Mich.
Michigan University.
Milwaukee Public Museum.
Minnesota Botanical Studies.
Minnesota Geological Survey.
Minnesota School of Mines.
Minnesota Natural History Society.
Minnesota Sea Side Station (year book).
Minnesota University.
Missouri Botanical Garden.
Missouri Geological Survey.
Missouri University.
Montana Horticultural Society.
Montana Land Office Report.
Montana State Board of Horticulture, Helena.
Montana State College Agri. and Mech. Arts, Bozeman.
New Jersey Geological Survey.
New York Academy of Science.
New York Botanical Garden.
New York Microscopical Society.
New York State Forestry College.
New York State Library, Albany, N. Y.
New York University, Albany.
New York Zoological Society.
North Carolina University.
North Dakota University.
Ohio Geological Survey, Columbus, O.
Ohio Naturalist.

Ohio University, Columbus, O.
Oklahoma University.
Oregon University.
Ottawa Literary and Scientific Society, Ottawa.
Pennsylvania University, Philadelphia, Pa.
Philadelphia Academy of Natural Sciences.
Philadelphia Zoological Society.
Philippine Islands, Census Bulletin.
Philippine Islands, Mining Bureau.
Philippine Museum.
Rochester Academy of Science, Rochester, N. Y.
St. Louis Academy of Science.
Smithsonian Institution.
Society of Arts, Massachusetts.
South Carolina College.
Staten Island Natural Sci. Association.
Swarthmore College.
Technology Quarterly.
Texas University.
Tuffts College, Medford, Mass.
Wagner Free Institute of Science, Philadelphia.
Washington Philosophical Society.
Washington University.
Western Society of Engineers, Chicago.
Whitney Society, Iowa University.
Wisconsin Geological Survey, Madison.
Wisconsin Natural History Society.
Wisconsin Academy of Science, Arts and Letters.
Wisconsin University.
Wisconsin University School of Mines.
Wyoming University, School of Mines.

SCHOOL OF MUSIC.

Mrs. Blanche Whitaker, Director.

During the past year the progress made in the general standing of this department has been very gratifying. There has been a larger number of pupils enrolled than ever before, and very good work has been performed. The several musicales given during the year giving evidences of the constant and steady improvement. Medals were donated to the pupils of the

school by Mr. Alfred Reeves of Helena, and Mr. Geo. Wilds of Kentucky, also by the director, Mrs. Whitaker.

The Reeves' medal was awarded to Miss Ethel Orvis, of Missoula, for the greatest regularity and progress during the school year. The Wilds' medal to Mr. George Greenwood for general proficiency and the director's medal went to Miss Bernice Berry.

The double sextette did very excellent work all through the season last year and is now continuing on the same lines. The personnel being Miss Ruth Kellogg, Miss Anabel Ross, Miss Zona Shull, Miss Jessie Bishop, Miss Daisy Kellogg, Miss Lida Featherman, Miss Avery May, Miss Teddy Welch, Miss Victoria Whitaker, Miss Wilcox, Miss Minta McCall and Miss Ona Sloane.

The Glee Club is now working as a sextette, the members being Messrs. Rowe, Sibley, Harkins, Carey, Grush, Simons, Willis. Dickinson, Hughes and Corbin.

An orchestra has also been started and is doing excellent work. It is constituted as follows:

First violins, Miss Thula Toole and Mr. Carey.
Second violins, Miss Helen Lombard and Mr. Meany.
First cornet, Mr. Hart Willis.
First clarinet, Mr. Marks.
Trombone, Mr. Will Dickinson.
Drums, Mr. Simons.

The University Silver Cornet Band is under the leadership of Mr. Hart Willis. The band practices every day during the noon hour and is making great headway. Members as follows:

Samuel Marks, 1st B flat clarionet.
Wm. Sparks, E flt clarionet.
Herman McGregor, 2d B flt clarionet.
Hart Willis, solo flat cornet.
Joseph Meany, solo flat cornet.
Charles Marshall, 1st flat cornet.
Claude Spaulding, 2d B flat cornet.
John Hurley, 3d B flt cornet.
Edward Langly, E flat cornet.
Delabert Grush, solo alto.
Dan McGregor, 1st alto.
Ralph Harmon, 2d alto.
Herbert Hughes, 1st tenor.

Joseph Buckhouse, 2d tenor.
Lawrence Simpson, 3d tenor.
James Bonner, 1st trombone.
Floyd Hardenburg, 2d trombone.
Wm. Dickinson, baritone.
Charles Dimmick, tuba.
Earl Greenough, tuba.
John Flynn, bass drum.
Ed. Simons, snare drum.

THE BIOLOGICAL STATION.

Morton J. Elrod, M. A., M. S., Director.

Sixth Annual Session—The announcement which was printed for circulation is appended to this report as supplementary information, and will give the general plan of work. The details as therein described were carried out in full. This was the sixth annual session, completing the period of time as first planned for when the work was started. The session lasted five weeks, the same as last season. The change from four weeks to five has proven very satisfactory, and the full time has been used. A still longer session might be planned, giving more time to come and go, as some cannot remain all the time, and others desire to stay as long as work is being continued. The station was occupied by the first arrivals about the first of July, and was used constantly from that time until about the 10th of September. I remained in the field collecting until September 9th, thus having about six weeks of time for observation after the formal closing of the station.

Material Collected—In addition to taking care of those attending the station, considerable time was found for gathering specimens and making observations. A large series of insects was secured, in the different orders, and carefully and securely cased in insect boxes. These are all properly labelled and will be deposited in the museum among the collections. Considerable time was devoted to gathering seeds of the different species of pine, requiring several trips to the woods. It is intended to carry on a series of experiments relative to the fertility of these seeds, and their adaptability to certain regions in which trees are not now growing. Some additions were made to the plants, and a few sections of trees were secured to complete

the collection made last year. There is now in the collection of woods a section of almost every tree indigenous to the soil of Montana. These are the pick of the woods—not the largest, but the choice of all that were growing. When properly smoothed and polished they will give an excellent idea of the timber of the state. To accompany these, cones and seeds have been taken in quantity, and photographs of the trees in good locations have been made. The museum exhibit for each tree will then be sections of wood showing the bark, with different grains of wood polished, cones, seeds, leaves, photographs of the forests where trees are in abundance, and an enlargemnt of a choice tree.

A report of the collection would not be complete without mention of the series of photographs, illustrating the geology and natural history of the region. The first part of the season was perfect so far as weather is concerned, and a fine series of views was taken. The views from the mountain summits were exceptionally fine. Many of these are presented with this report, as supplementary information, and will speak for themselves. During the latter part of the summer forest fires made such a dense atmosphere that photography out of doors was an impossibility and the time was devoted to making illustrations of native flowers, leaves and cones. A trip into the high hills was planned for late August, but was abandoned on account of the smoky atmosphere, which would render the work almost useless.

Mention should be made of the work on the lake, in taking material from the water. As mentioned in former reports, this work is being continued. The material has been sent to specialists for examination and report and will be written up at a later date. The appended extracts from the press reports during the progress of work throughout the summer will give a more comprehensive idea of what was done.

Method of Work—This was the same as adopted in former sessions, and has been outlined in previous reports. The laboratory is not made a place where regular class work is to be followed at stated times. The size of the building and the general scheme of work does not admit of this. The station is headquarters for those who wish a place where the stimulus for study is supplied, where there is ample opportunity for gathering material or carrying on investigations, and where books and necessary material are at hand for reference and use. As a

result each person is a class unto himself, and carries on such line of study as is desirable or suited to his needs. Naturally most of the study is out of doors. This is ideal and affords a fund of information at first hand. I consider that the best lesson one can have and one which conveys the most lasting impression is a walk through the fields or woods with some one to point out objects, direct the attention and stimulate the mental activities by a series of judicious questions.

The excursions were taken as advertised, and report of them is to be found in the press reports. During these excursions frequent conferences were held for the purpose of discussing various topics. In addition to the excursions lectures were held at the laboratory almost daily, and each week a public lecture was presented in the town.

In connection with this topic I beg to quote from an editorial in the Anaconda Standard, which gives the opinion of others as to the value of this method of outdoor study.

From the Anaconda Standard:

"**The Biological Station**—Last week witnessed the close of the annual session of the summer school which the state university conducts at its biological station at the upper end of Flathead lake. The session at the station this year was entirely successful; the number of students was large and the work done was of higher grade than what has hitherto been attempted by the students. Among the visitors at the station this year were, as has been the case in previous seasons, some of the country's notable scientists.

The record of the university's biological station has been one of remarkable success. Discoveries have been made that have attracted the attention of scientists the country over; new species of plant and animal life have been identified and the contributions of the station to the scientific knowledge of this section have been of no mean importance.

The old biological laboratory dealt only with the dead thing; the new laboratory, of which the Montana institution is an example, makes a careful study of the living creature. The new system will prove of great benefit, practically and theoretically. There are many points about the lives of our commonest wild creatures of which the scientist knows absolutely nothing. The

animal field has been studied either from dead bodies or from living animals imprisoned and rendered unnatural by confinement. The new biological study considers these creatures in their native state and under natural conditions.

Before the work is over it will doubtless be discovered how birds that are useful in suppressing insect pests may be bred and encouraged; how gaps in bird life in a region where a particular bird is needed for a particular insect, may be filled. These are but suggestions of the possibilities of this form of work, viewed from the practical standpoint. The field is an inexhaustible one and the opportunities afforded in the local field of the Montana station are great. The institutiton is one which deserves encouragement."

Instructors—In addition to the writer, Principal Maurice Ricker, of Burlington, Iowa, and Professor James M. Hamilton, of the University, who has since become President of the Montana College of Agriculture and Mechanic Arts, took part in the work. These gentlemen are to be commended for their kindness in giving their services gratuitously. The same generosity and kindness has been shown by all who have assisted in the work during the past six sessions, and to all the thanks of the authorities of the University are due. The general impression prevails that compensation is given for this service, which is not the case. Whatever good may come to the schools of the state or the citizens of the state is largely through the kindness and friendly interest of the instructors, who are willing to work for the good they may do. The amount appropriated has never been equal to the expense involved, and without the friendly aid of Senator W. A. Clark the work of the station would never have reached the measure of success that it has attained. The work of the instructors is to direct those engaged in study, to prepare lectures or talks for these and for the public, and to gather material and carry on observations as they may see fit or the work may demand.

Lectures—These were of two kinds, those for the station people and those for the public. Visitors were made welcome to all lectures, and generally some were present. But the lectures prepared for the public were well attended and listened to with the closest attentiton. About a dozen lectures were given in the laboratory, in addition to the conferences, and four

given in public. These latter were all with the stereopticon. The entire populace seemed to turn out and standing room was at a premium. The first was by Professor J. P. Rowe, who kindly consented to speak on "The Past History of the Earth." The second was by the writer, on the subject, "Natural History Around Big Fork." The third was by Professor, now President James M. Hamilton, on the subject "The Custer Massacre." The last was by Principal Maurice Ricker on the subject, "The St. Louis Exposition." To show their appreciation of our efforts in giving them these lectures the citizens of Big Fork and vicinity prepared a banquet for all the station people at the close of the work, which was highly appreciated.

Attendance and Visitors—The attendance has usually been greater than the small outdoor laboratory will accommodate. The following list gives a summary of attendance for the past five seasons, exclusive of visitors and instructors:

1899	12
1900	17
1901	27
1902	21
1903	22
1904	21

When it is remembered that the laboratory was only constructed to make room for a dozen it will readily be understood how closely packed even so small a number must be. It is believed that within a very short time the new Jocko cutoff railroad will be built either from Kalispell or Columbia falls to the Northern Pacific at Jocko. When this is done the railroad will pass the laboratory door. It is confidently believed that this will make conditions such that large numbers will come to the station who are now deterred by the thought of a stage ride and stay over night on the road. Moreover, it will not be difficult to secure delegations of students from the eastern states by proper advertising. Many of these have come to the state in the past, through the station; all have been delighted; some have later returned to live, and all have added to the development of the study of the natural history by their collections and reports. This phase of the work is worthy of favorable consideration, and is one of the best ways of encouraging the right kind of immigration.

The number of visitors is large, considering the number pass-

ing through this part of the state. Several representatitves of the Bureau of Forestry paid us a visit and were given such aid as we could furnish in finding the particular things in which they were interested. There are frequent visits from the forest reserve men, from the citizns of Kalispell and vicinity and from others who cross the lake on the steamer and stay over a day to look into the work.

Press Reports—Frequent reports were sent to the daily and weekly press, giving authentic information in regard to the work being pursued and detailing such information as would be of general interest. It is believed that this plan is to be commended, as it gives the people of the state a comprehensive idea of what is actually done, and at the same time is of great educational value because of the information conveyed. The total amount of space covered in the different papers will aggregate about eighty columns for the season. This can not fail to be of great value to the public. The only regret has been that it was impossible to secure sufficient copies of the report for use by all the papers that were willing to do the printing.

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